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APPLICANT : RAIMUZU:KK;

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TITLE : COMPOSITE MATERIAL

ABSTRACT : PURPOSE: To provide superior lightweight characteristic and heat resistance and also to improve oxidation resistance at high temp. by coating the surface on which Pt or Pt-Al phase is formed with a thin-film layer of TiAl-type intermetallic compound.

CONSTITUTION: The surface of a base material composed of Ti or Ti alloy on which Pt or Pt-Al phase is formed by means of the implantation of Pt ions or Pt and Al ions is coated with TiAl-type intermetallic compound. By the above procedure, on exposure to high-temp. oxidizing atmosphere, Al diffused from the resulting thin-film layer is allowed to react with the Pt phase or Pt-Al phase on the base-material surface and fixed in the form of Pt-Al compound, by which the diffusion of Al in the thin-film layer into the base material can be prevented. As a result, sufficient amounts of Al can be incorporated to the thin-film layer and Al_2O_3 contributing as an oxidation protective film can be formed on the surface of the thin-film layer of TiAl-type intermetallic compound in a high-temp. oxidizing atmosphere, by which high- temp. oxidation resistance due to the thin-film layer of intermetallic compound $TiAl_3$ as well as the superior lightweight characteristic and heat resistance of Ti alloy, etc., can be obtained.

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(71) Applicant: **RAIMUZU:KK**

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(74) Representative:

(54) COMPOSITE MATERIAL

(57) Abstract:

PURPOSE: To provide superior lightweight characteristic and heat resistance and also to improve oxidation resistance at high temp. by coating the surface on which Pt or Pt-Al phase is formed with a thin-film layer of TiAl-type intermetallic compound.

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to high-temp. oxidizing atmosphere, Al diffused from the resulting thin-film layer is allowed to react with the Pt phase or Pt-Al phase on the base-material surface and fixed in the form of Pt-Al compound, by which the diffusion of Al in the thin-film layer into the base material can be prevented. As a result, sufficient amounts of Al can be incorporated to the thin-film layer and Al2O3 contributing as an oxidation protective film can be formed on the surface of the thin-film layer of TiAl-type intermetallic compound in a high-temp. oxidizing atmosphere, by which high- temp. oxidation resistance due to the thin-film layer of intermetallic compound TiAl3 as well as the superior lightweight characteristic and heat resistance of Ti alloy, etc., can be obtained.